

- **BASELINE WETLAND/WATERCOURSE STUDIES - *Reports***

- Wetland/Watercourse Delineations (1)
- Wetland Characterization/Inventory (1)
- Vernal Pool Studies (3)
- Surface Water Quality Sampling & Stream Bioassessment (including Cedar Swamp Brook) (2)
- Wetlands Functions & Values (1)
- Soil Testing (1)

Total hours in field: +/- 62.0 (September 2015 to July 2016)

- **ANALYSIS OF POTENTIAL WETLAND/WATERCOURSE IMPACTS & MITIGATION - *Reports***

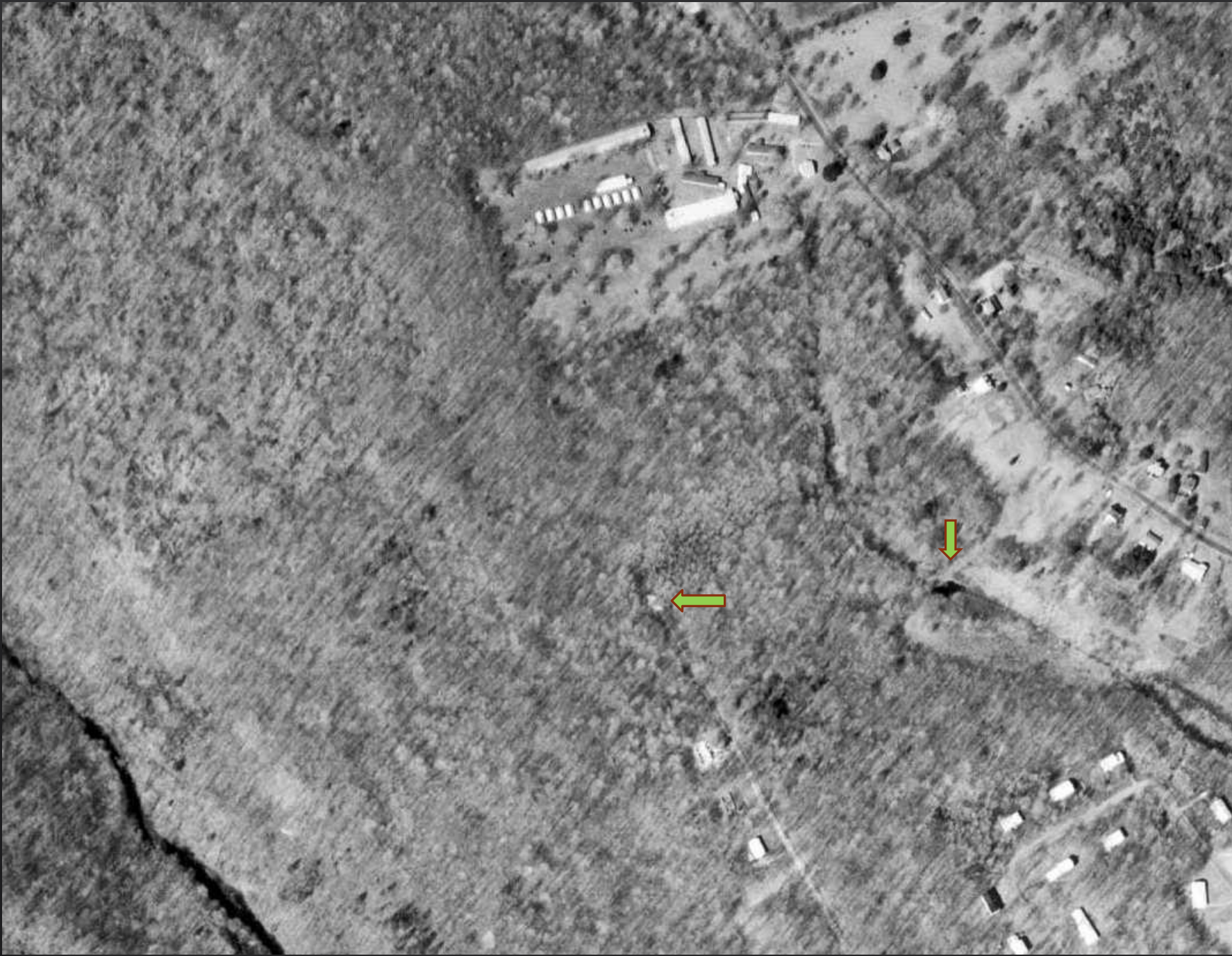
- Wetlands Assessment & Impacts Analysis (1)
- Review of Stormwater Management System: *Water Quality* (1)
- Wetland Mitigation (1)



2013 Aerial Photograph



2016 Aerial Photograph

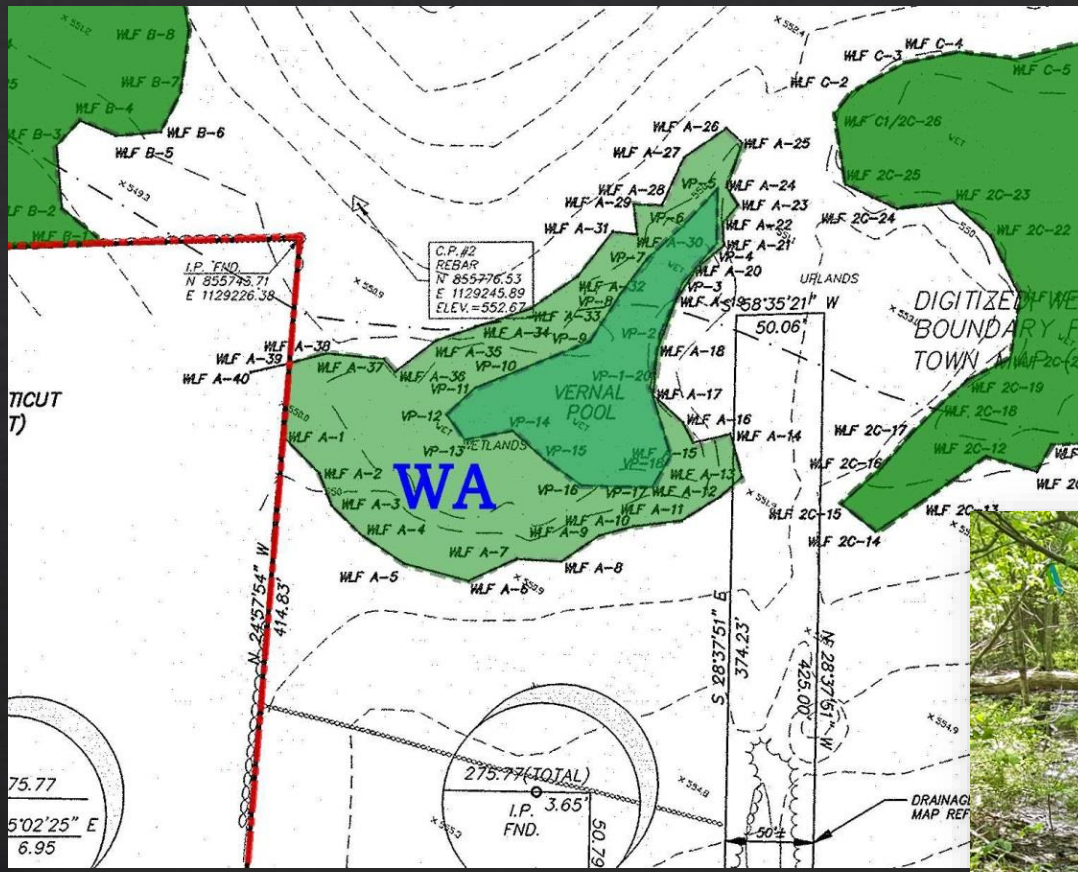


1965 Aerial Photograph





1986 Aerial Photograph



- Forested Swamp (Red maple)
- Seasonally Flooded
- In Cedar Swamp Brook Watershed



- Man-Enhanced Hydrology
- Breeding Habitat for:
 - Wood Frogs (78 egg masses)
 - Spotted Salamanders (5 egg masses)

Wetland 'A' ("Vernal Pool Wetland")



- April 2016; northerly view



- Wood Frog egg mass

Wetland 'A' ("Vernal Pool Wetland")



- Spotted Salamander Egg Mass



- Wood Frog tadpoles – 5-25-16

Wetland 'A' ("Vernal Pool Wetland")

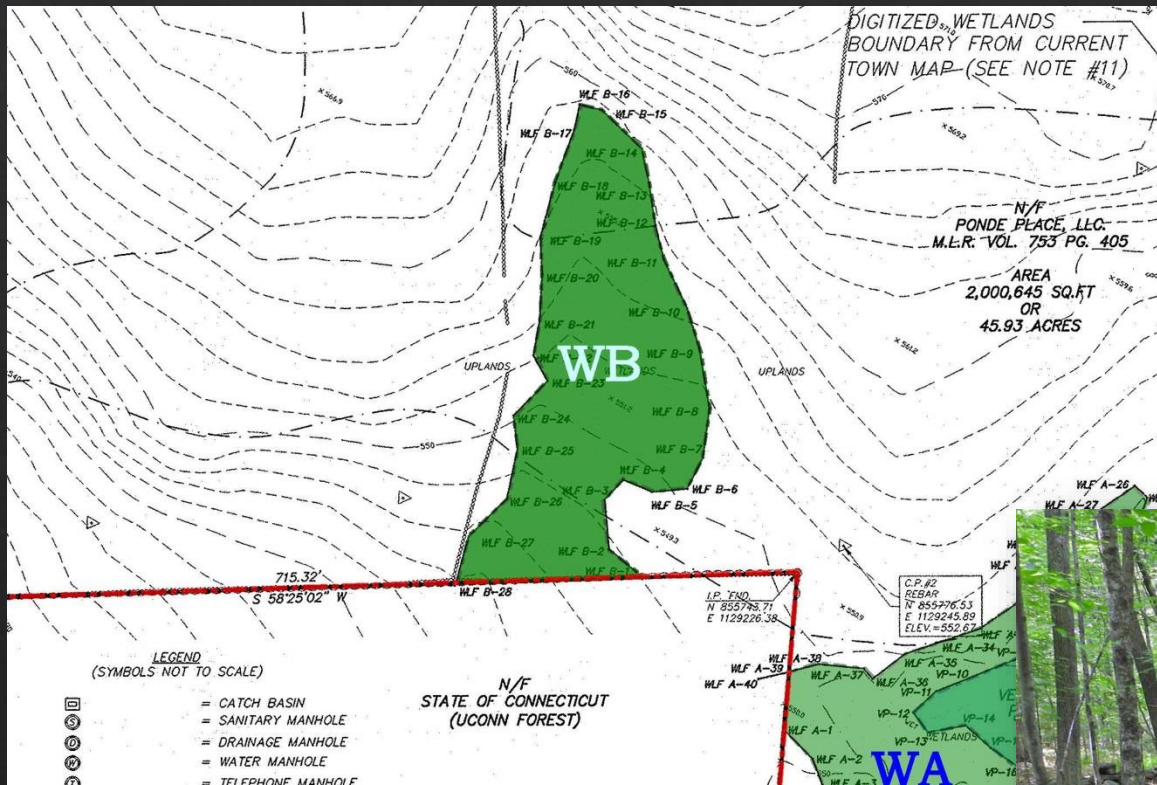


- 7-16-16; southerly view



- 7-16-16; westerly view

Wetland 'A' ("Vernal Pool Wetland")



- Forested Swamp
- Seasonally Flooded *and* Seasonally Saturated
- In Cedar Swamp Brook Watershed



- Seasonal hillside seepage
- Connects to off-site wetlands
- Low-Moderate Japanese Barberry understory

Wetland 'B' ("Hillside Seepage Wetland")



- May 2016
- Moderate understory plant diversity



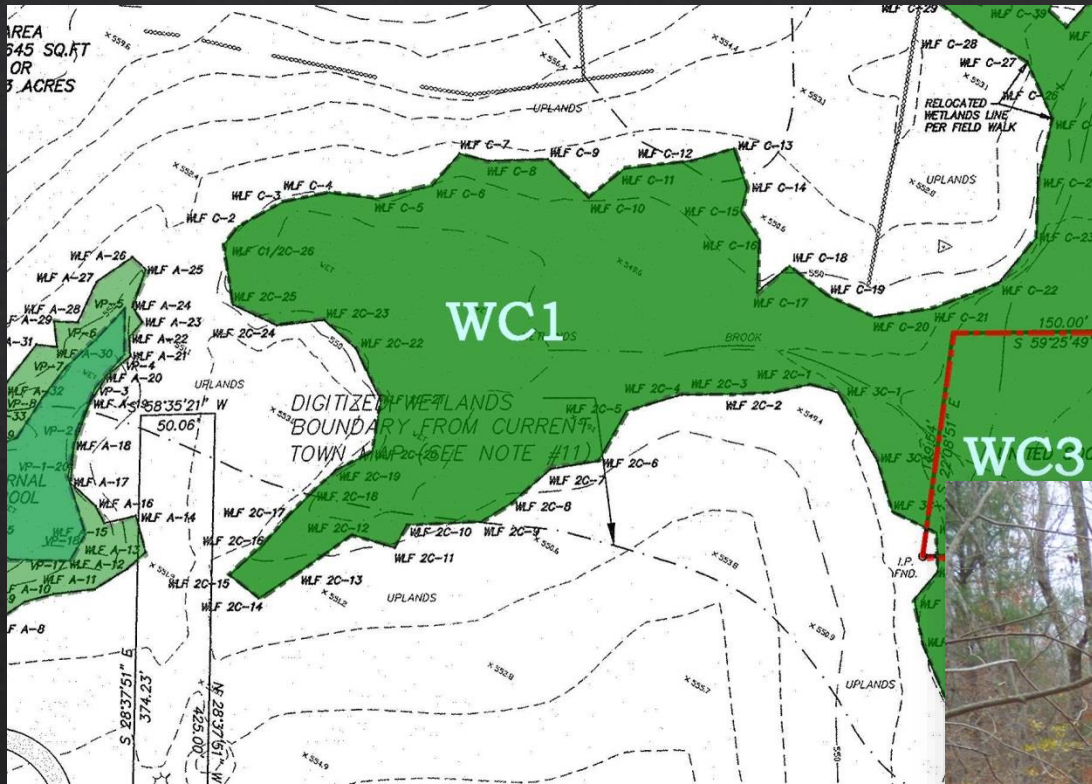
- Moderate microtopography

Wetland 'B' ("Hillside Seepage Wetland")



- Fall 2015
- Far upper (northern) section

Wetland 'B' (*"Hillside Seepage Wetland"*)



- Forested Swamp
- Seasonally Flooded, Seasonally Saturated, *and* Saturated
- Poorly and Very Poorly drained
- In Eagleville Brook Watershed



- November 2015; westerly view
- Moderate microtopography
- Low Japanese Barberry density
- Highest wetland plant diversity on-site (understory)

Wetland 'C1'



- October 2015



- 7-16-16; southeasterly view

Wetland 'C1'



- 7-16-16
- Seasonally flooded to saturated; very poorly drained



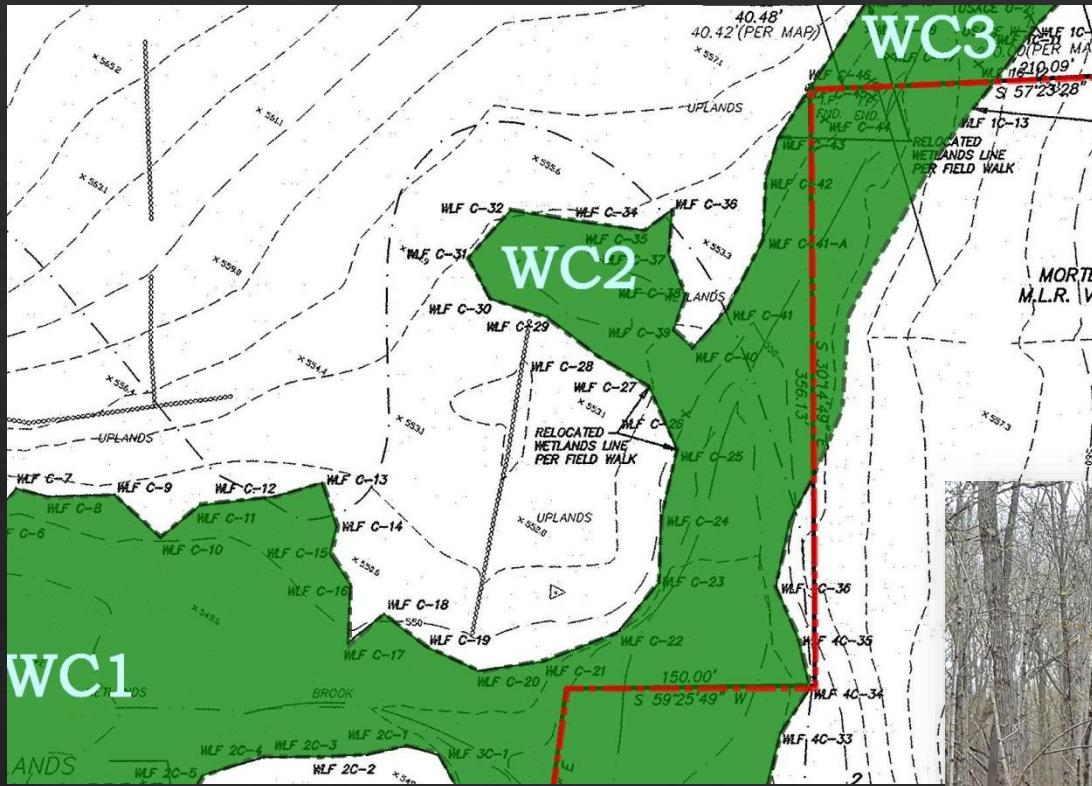
- 7-16-16; westerly view
- Outlet intermittent stream

Wetland 'C1'



- September 2015
- Outlet intermittent stream
- Westerly view

Wetland 'C1'



- Forested Swamp
- Seasonal Seep
- Seasonally flooded to seasonally saturated



Wetland 'C2'

- March 2016; easterly view

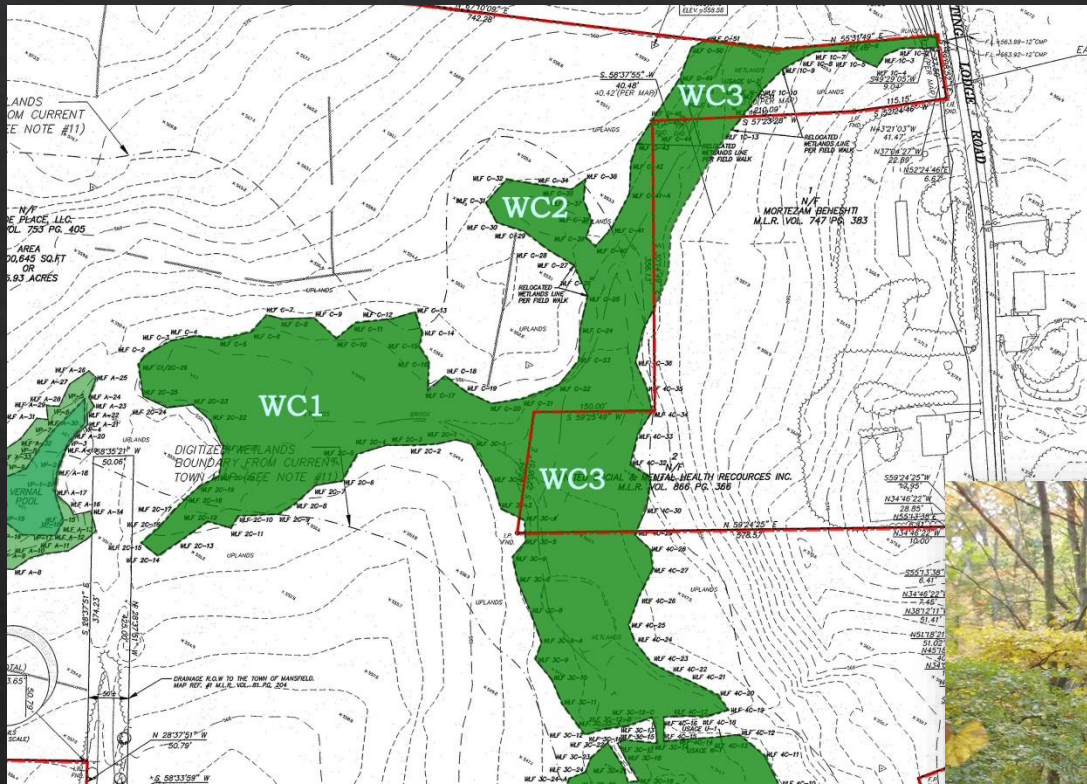


- April 2016
- Skunk cabbage, violets, marsh marigold



- November 2015; easterly view

Wetland 'C2'



- Forested Swamp
- North of old road crossing
- Seasonally flooded, seasonally saturated, and saturated
- Seasonal (intermittent) watercourse



- October 2015; south-central section
- Altered hydrology

Wetland 'C3'



- November 2015
- Central section
- Moderate density Japanese barberry understory (locally dense)



- September 2015; seasonally saturated section

Wetland 'C3'



- Very poorly drained soils
- Organics over medium sand
- Sphagnum mosses locally abundant
- Good post-breeding habitat for wood frogs



- July 2016; southern section

Wetland 'C3'

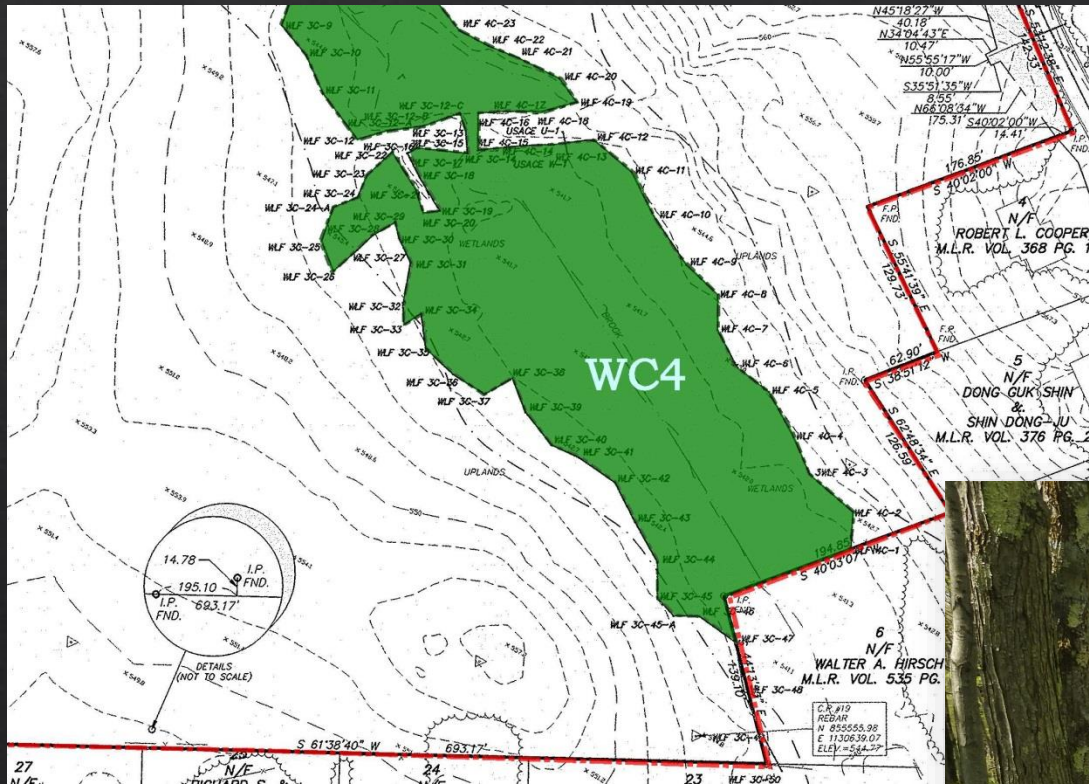


- November 2015; upper section; southerly view



- September 2015; north-central section
- Seasonal Stream

Wetland 'C3'



- Forested Swamp
- South of old road crossing
- Seasonally flooded, seasonally saturated, and saturated
- Seasonal (intermittent) watercourse



- May 2016; central section; northeasterly view
- Denser canopy than WC3
- Sampling Station S-1

Wetland 'C4'



- December 2015; lower section; southerly view
- Seasonal Stream



- November 2015; northern section
- Old roadway crossing (far background)

Wetland 'C4'



- July 2016; upper section;
northwesterly view
- Seasonal Stream



- July 2016; southwesterly view

Wetland 'C4'



- October 2015; lower section; southerly view
- Eastern edge, seasonally saturated

Wetland 'C4'

PRODUCED BY: REMA ECOLOGICAL SERVICES, LLC
DATE 5-29-16 SCALE: NTS



FIGURE A1: Surface Water Quality Sampling Stations at the Proposed "**Lodges at Storrs**" residential community, Mansfield, CT (as seen on a April 2013 aerial photo; Google Earth)

Surface Water Quality

Table 1. Surface water analytical results in Vernal Pool (Wetland A), and an unnamed Intermittent Stream (Wetland C4) at Proposed Lodges at Storrs, Hunting Lodge Road, Mansfield, CT, on 3-24-16.

<i>Sampling Station</i>	<i>Unnamed Stream</i>	<i>Vernal Pool</i>	<i>CT Standards</i>
<i>Sampling Date:</i>	3/24/2016	3/24/2016	
<i>Conductivity (uS/cm)</i>	211.0	98.1	NE
<i>pH³</i>	7.06	6.01	as naturally occurs ¹
<i>Total Phosphorus as P (µg/l)</i>	40.00	160.00	only of natural origin ¹ , 23.75 ²
<i>Ortho Phosphorus as P (µg/l)</i>	<0.01	0.01	NE
<i>Nitrate-N (mg/l)</i>	0.45	1.39	0.31 ² (includes Nitrite-N)
<i>Nitrite-N (mg/l)</i>	<0.01	<0.01	NE
<i>Total Keldahl Nitrogen</i>	0.35	2.48	5 ¹ ; 1.26 ²

Table 1. Surface water analytical results on 5-12-16 in un-named Intermittent Stream (Wetland C4) at Proposed Lodges at Storrs, Hunting Lodge Road, Mansfield, CT, and in Cedar Swamp Brook, offsite to the west.

Sampling Station	Unnamed Stream	Cedar Swamp Brook	CT Standards
Sampling Date:	5/12/2016,	5/12/2016	
Sampling Time:	2:25 PM	4:42 PM	
Conductivity (μ S/cm)	176.7	183.0	NE
Salinity (PPT)	0.10	0.10	NE
Temperature (degrees C)	19	20	as naturally occurs ¹
Total Phosphorus as P (μ g/l)	30	10	only of natural origin ¹ , 23.75 ²
Ortho Phosphorus as P (μ g/l)	<0.01	<0.01	NE
Nitrate-N (mg/l)	0.38	0.10	0.31 ² (includes Nitrite-N)
Nitrite-N (mg/l)	<0.01	<0.01	NE
Ammonia (mg/l)	<0.05	<0.05	1.9 ³ (chronic)
Total Keldahl Nitrogen (mg/l)	0.34	0.40	5 ¹ ; 1.26 ²

Summary of Assessment Results (rationales in following pages)

- 1** GROUNDWATER RECHARGE/DISCHARGE
- 2** FLOODFLOW ALTERATION (Storage & Desynchronization)
- 3** FISH AND SHELLFISH HABITAT
- 4** SEDIMENT/TOXICANT/PATHOGEN RETENTION
- 5** NUTRIENT REMOVAL/RETENTION/TRANSFORMATION
- 6** PRODUCTION EXPORT (Nutrient)
- 7** SEDIMENT/SHORELINE STABILIZATION
- 8** WILDLIFE HABITAT
- 9** RECREATION
- 10** EDUCATIONAL/SCIENTIFIC VALUE
- 11** UNIQUENESS/HERITAGE
- 12** VISUAL QUALITY/AESTHETICS
- 13** ENDANGERED SPECIES HABITAT
- 14** FISH AND SHELLFISH HABITAT (Supporting marine resources)

Wetland A Wetland B Wetland C

Y	P	P
Y	Y	P
N	N	N
N	N	Y
Y	Y	P
P	Y	P
N	Y	Y
P	Y	P
Y	Y	Y
N	N	N
P	Y	P
N	N	N
N	N	N

Present? (Y/N) Principal? (P)

- OVERVIEW OF WETLAND IMPACTS & MITIGATION

- DIRECT WETLAND IMPACTS

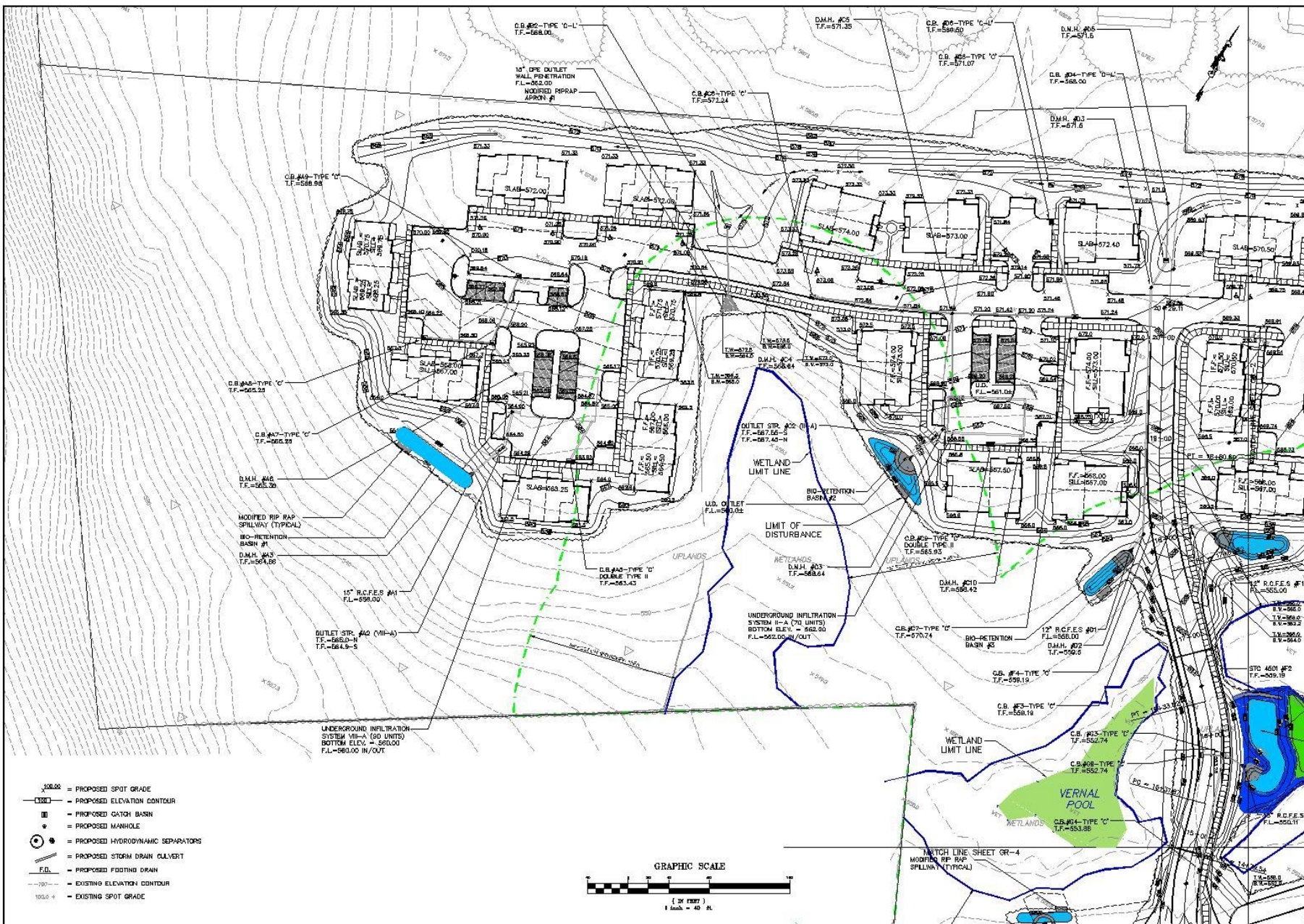
- 4,402 sq. ft. (0.10 acres)

- POTENTIAL INDIRECT WETLAND IMPACTS

- Short-term
 - Erosion & Sedimentation
- Long-term
 - Wetland Setbacks
 - Wetland Hydrology and Stream Flow
 - Water Quality

- MITIGATION

- Wetland Restoration - *Replication* (+/- 7,800 sq. ft.)
- Wetland Restoration - *Invasives Removal* (+/- 1.76 acres)



THE LODGES AT STORRS

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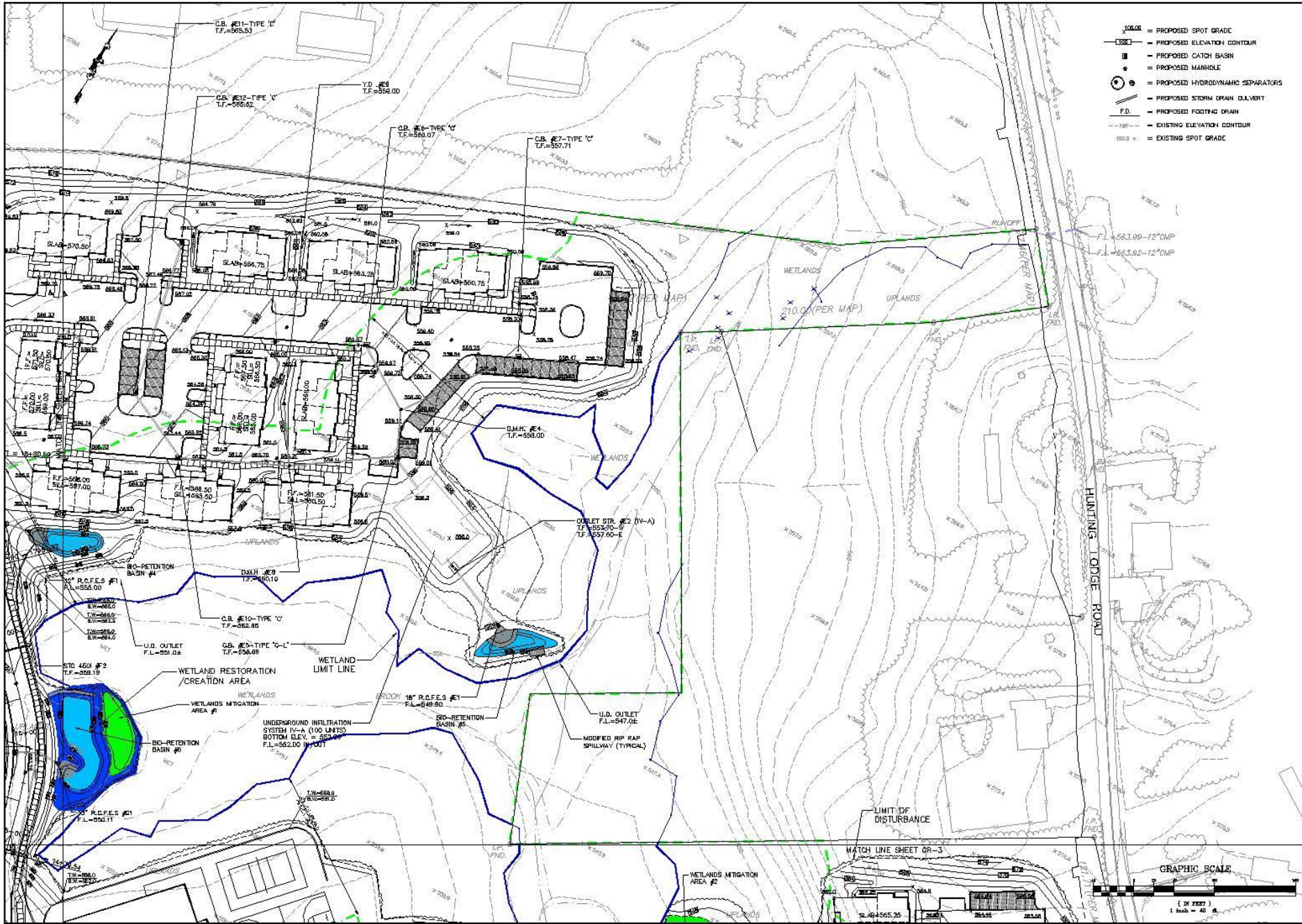
No.	Date	Description
1	03-24-16	Issued
2	08-10-16	Revised

STORRS LODGES, LLC
 HUNTING LODGE ROAD
 WAREFIELD, CONNECTICUT

Drawn by: RAC Job no: 04051
 Date: 03-16-2016
 Scale: 1" = 40'
 Checked by: DSG Sheet no: 1 OF 4
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GR-1

Grading Plan



THE LODGES AT STORRS

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Revisions	
No.	Description
1	03-24-18 General
2	08-10-18 Town Comments

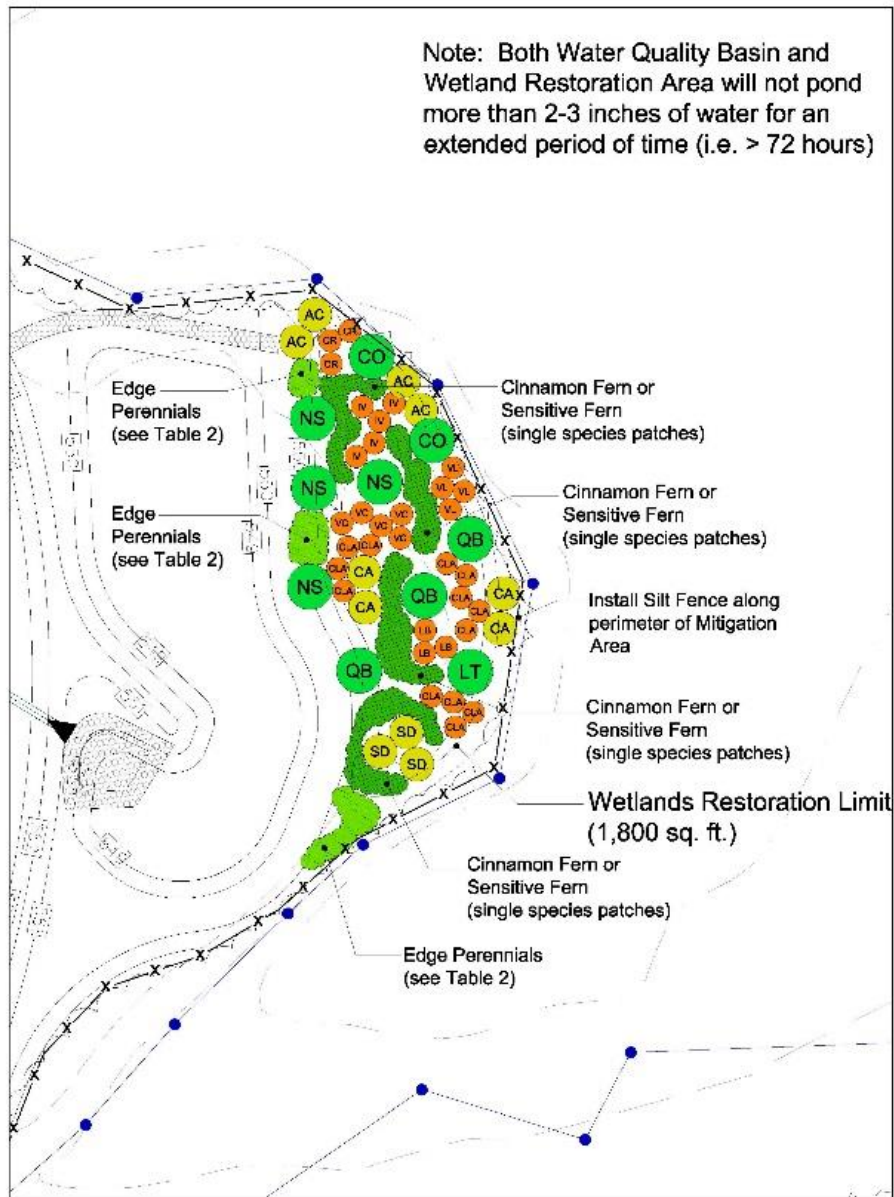
GRADING PLAN
STORRS LODGES, LLC
 HUNTING LODGE ROAD
 HANFIELD, CONNECTICUT

Drawn by: RAK Job No. 04027
 Date: 02-16-2018 Drawn by: RAK Job No. 04027
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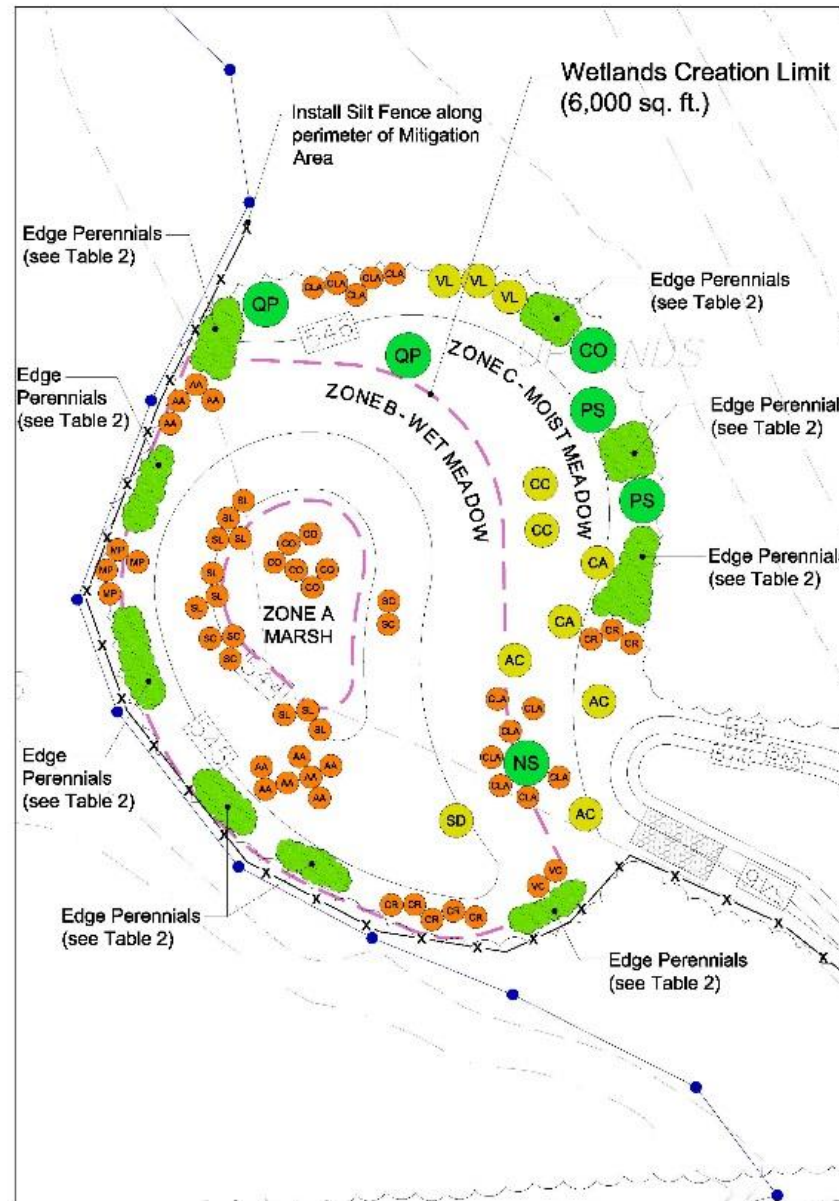
GR-2

Grading Plan

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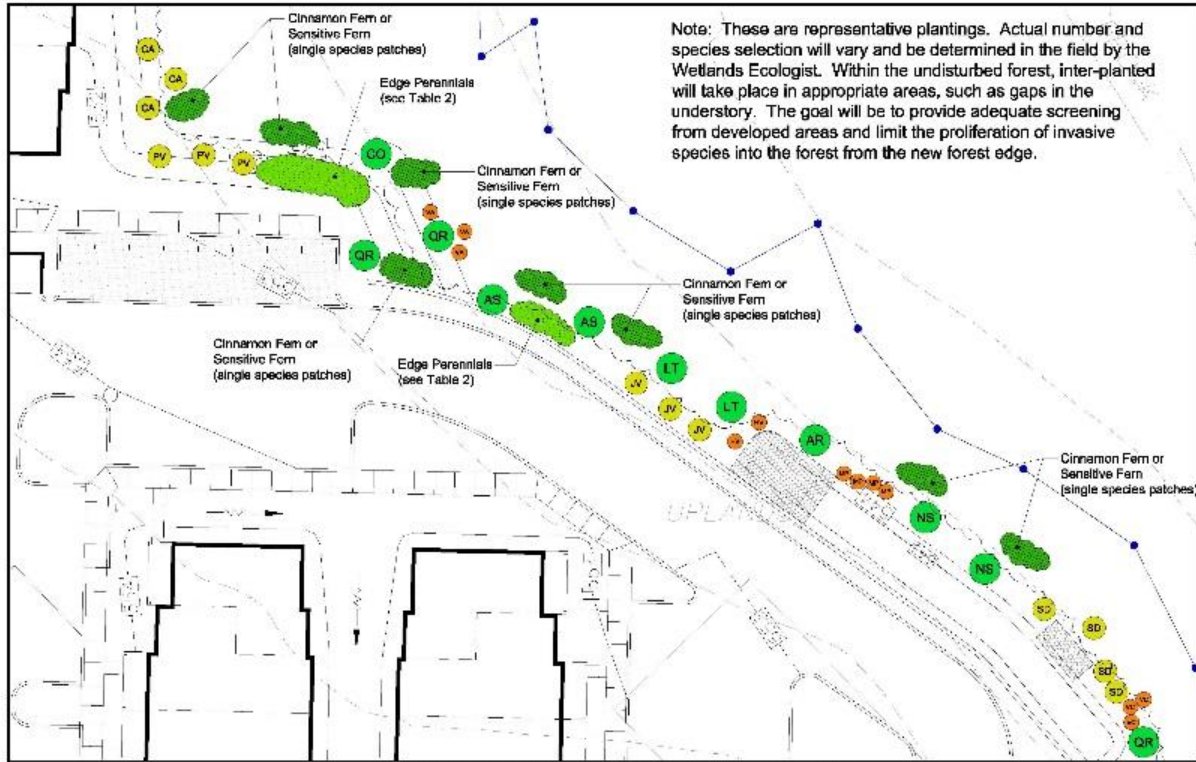
MITIGATION AREA #1



MITIGATION AREA #2

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		<p>Client: THE LODGES AT STORRS Address: 100 Main St., Storrs, CT 06268 Phone: (860) 255-8800 Fax: (860) 255-8800 Email: info@thelodgesatstorr.com</p>	
<p>Prepared by: STORRS LODGES, LLC Address: 100 Main St., Storrs, CT 06268 Phone: (860) 255-8800 Fax: (860) 255-8800 Email: info@thelodgesatstorr.com</p>		<p>Scale: 1" = 100' (Horizontal) 1" = 20' (Vertical) Date: 10/1/02 Drawn by: J. Heeketh Checked by: J. Heeketh Approved by: J. Heeketh</p>	
<p>MI-1</p>		<p>10/1/02</p>	

Mitigation Plan



Typical Wetlands Buffer Planting

The diagram illustrates a cross-section of a wetland buffer planting. It shows a building footprint on the left, a road on the right, and a wetland area in the center. The buffer planting consists of several patches of different plant species, each labeled with a code: CA, PV, CO, OR, AS, LT, JV, AR, NS, SD, and QR. The patches are arranged in a way that they form a buffer between the building and the wetland. The diagram also shows a building footprint on the left and a road on the right.

Note: These are representative plantings. Actual number and species selection will vary and be determined in the field by the Wetlands Ecologist. Within the undisturbed forest, inter-planted will take place in appropriate areas, such as gaps in the understory. The goal will be to provide adequate screening from developed areas and limit the proliferation of invasive species into the forest from the new forest edge.

Plant Species	Quantity	Plant Species	Quantity
CA	10	CA	10
PV	10	PV	10
CO	10	CO	10
OR	10	OR	10
AS	10	AS	10
LT	10	LT	10
JV	10	JV	10
AR	10	AR	10
NS	10	NS	10
SD	10	SD	10
QR	10	QR	10

Plant Species	Quantity	Plant Species	Quantity
CA	10	CA	10
PV	10	PV	10
CO	10	CO	10
OR	10	OR	10
AS	10	AS	10
LT	10	LT	10
JV	10	JV	10
AR	10	AR	10
NS	10	NS	10
SD	10	SD	10
QR	10	QR	10

Plant Species	Quantity	Plant Species	Quantity
CA	10	CA	10
PV	10	PV	10
CO	10	CO	10
OR	10	OR	10
AS	10	AS	10
LT	10	LT	10
JV	10	JV	10
AR	10	AR	10
NS	10	NS	10
SD	10	SD	10
QR	10	QR	10

Plant Species	Quantity	Plant Species	Quantity
CA	10	CA	10
PV	10	PV	10
CO	10	CO	10
OR	10	OR	10
AS	10	AS	10
LT	10	LT	10
JV	10	JV	10
AR	10	AR	10
NS	10	NS	10
SD	10	SD	10
QR	10	QR	10

Plant Species	Quantity	Plant Species	Quantity
CA	10	CA	10
PV	10	PV	10
CO	10	CO	10
OR	10	OR	10
AS	10	AS	10
LT	10	LT	10
JV	10	JV	10
AR	10	AR	10
NS	10	NS	10
SD	10	SD	10
QR	10	QR	10

Plant Species	Quantity	Plant Species	Quantity
CA	10	CA	10
PV	10	PV	10
CO	10	CO	10
OR	10	OR	10
AS	10	AS	10
LT	10	LT	10
JV	10	JV	10
AR	10	AR	10
NS	10	NS	10
SD	10	SD	10
QR	10	QR	10

Plant Species	Quantity	Plant Species	Quantity
CA	10	CA	10
PV	10	PV	10
CO	10	CO	10
OR	10	OR	10
AS	10	AS	10
LT	10	LT	10
JV	10	JV	10
AR	10	AR	10
NS	10	NS	10
SD	10	SD	10
QR	10	QR	10

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MI-2

Mitigation Plan